MENDED per A

2. (Amended) A DNA molecule coding for a protein having the enzymatic activity of an amylosucrase, obtainable by a process comprising the following steps:

(a) preparing a genomic or a cDNA library;

(b) transforming a suitable host cell with the library constructed according to (a);

(c) subjecting the transformed cells to iodine vapor in the presence of sucrose;

(d) identifying the cells that are stained blue;

(e) isolating and cultivating the cells identified in step (d);

(f) isolating the genomic DNA insert or the cDNA insert from the transformed cell; and

(g) verifying that the protein encoded by the isolated genomic or cDNA molecule has amylosucrase activity.

✓Add claims 22-45 as follows:

ADDED per A

22. (Added) A method of isolating a DNA molecule coding for a protein having the enzymatic activity of an amylosucrase comprising the following steps:

(a) preparing a genomic or a cDNA library;

(b) transforming a suitable host cell with the library constructed according to (a);

(c) subjecting the transformed cells to iodine vapor in the presence of sucrose;

(d) identifying the cells that are stained blue;

(e) isolating and cultivating the cells identified in step (d);

(f) isolating the genomic DNA insert or the cDNA insert from the transformed cell; and

(g) verifying that the protein encoded by the isolated genomic or cDNA molecule has amylosucrase activity.

ADDED per A

23. (Added) A method for determining whether a nucleic acid molecule encodes a protein having amylosucrase activity comprising:

(a) introducing a nucleic acid molecule into a host cell;

(b) subjecting the host cell to iodine vapor in the presence of sucrose;

(c) observing whether the host cell stained blue;

(d) isolating the nucleic acid molecule from the cell; and

(e) verifying that the protein expressed from the nucleic acid molecule has amylosucrase activity.

ADDED per A

24. (Added) A host cell comprising the DNA molecule according to claim 2.

ADDED per A

25. (Added) The host cell of claim 24 wherein said host cell is a plant cell.

ADDED per A

26. (Added) The host cell of claim 24 wherein said host cell is a fungal cell.

ADDED per A

27. (Added) A microorganism comprising the DNA molecule according to claim 2.

DDED
er A

28. (Added) A transgenic plant comprising the DNA molecule according to claim 2.

\DDED
er A

29. (Added) The plant according to claim 28 wherein the plant is a crop plant.

\DDED
er A

30. (Added) The plant according to claim 28 selected from the group consisting of maize, rice, wheat, barley, sugar beet, sugar cane, tobacco, tomato, and potato plant.

ADDED
er A

31. (Added) A vector comprising the DNA molecule according to claim 2.

ADDED
er A

32. (Added) The vector according to claim 31 wherein said DNA molecule is operably linked to promoter sequences.

ADDED
per A

MENDED
per

~~33. (Added) A process for the production of linear α-1,4 glucans, fructose~~ and/or fructose syrup comprising the steps of:

(a) culturing the host cell according to claim 24 or the microorganism according to claim 27, wherein the host cell or the microorganism secretes the amylosucrase into a culture medium comprising sucrose under conditions allowing expression and secretion of the amylosucrase; and

(b) recovering the produced α-1,4 glucans and/or fructose from the culture ~~medium.~~

ADDED per A

34. (Added) The process according to claim 33, wherein the host cell is immobilized.

ADDED per A

AMENDED per F

~~35. (Added) A process for the production of linear α-1,4 glucans comprising~~ the steps of:

(a) producing an expression cassette comprising the following DNA sequences:

(i) a promoter that is active in plants and ensures formation of an RNA in the respective target tissue or target cells;

(ii) the DNA molecule according to claim 2 encoding a protein having the enzymatic activity of an amylosucrase which is fused to the promoter in sense orientation; and

(iii) a signal sequence functional in plants for transcription termination and polyadenylation of an RNA molecule.

(b) transferring the expression cassette into a plant cell;

(c) regenerating a transgenic plant from the transformed plant cell; and

~~(d) isolating the linear α-1,4 glucans synthesized in the plant from the plant.~~

ADDED per A

36. (Added) The process according to claim 35, wherein the expression cassette contains a nucleotide sequence encoding a transit peptide which ensures transport of the protein having the enzymatic activity of an amylosucrase to a vacuole or to an apoplast.

ADDED per A

AMENDED per F

~~37. (Added) The process according to claim 35, wherein the DNA sequence~~ as indicated in (ii) which codes for a protein ~~having~~ the enzymatic activity of an amylosucrase ~~does not contain a signal sequence effecting secretion to a apoplast.~~

ADDED per A
AMENDED per F

~~38. (Added) The process according to claim 35, wherein the promoter defined in (i) ensures the expression of amylosucrase in sucrose storage organs of the plant.~~

ADDED per A

39. (Added) A linear α-1,4 glucan obtainable by the process of any one of claims 35 to 38.

ADDED per A
AMENDED per F

~~40. (Added) A process for the production of linear α-1,4 glucans, fructose~~ and/or fructose syrup in vitro comprising the steps of:

(a) contacting a solution comprising sucrose with a protein according to claim 8 under conditions allowing the conversion of sucrose to α-1,4 glucans and fructose by the amylosucrase; and

(b) recovering the produced α-1,4 glucans and/or fructose from the ~~solution.~~

ADDED per A

41. (Added) The process according to claim 40, wherein the protein is immobilized.

ADDED per A

42. (Added) A protein having the activity of an amylosucrase encoded by the amylosucrase coding region in the DNA insert of plasmid pNB2 from Neisseria bacteria having deposit number Deutsche Sammlung von Mikroorganismen No. 9196, by a DNA sequence that hybridizes to that coding region, or by a degenerate DNA sequence of any of the aforementioned sequences encoding a protein having the activity of amylosucrase.

ADDED per A

43. (Added) A protein having the activity of an amylosucrase encoded by a DNA sequence that begins at the initiating codon in the DNA insert of plasmid pNB2 from Neisseria bacteria having deposit number Deutsche Sammlung von Mikroorganismen No. 9196 as indicated in Seq ID No. 1 and ends at the first stop codon located in frame downstream of the initiating codon in that DNA insert.

ADDED per A

44. (Added) A fusion protein comprising a protein having the activity of an amylosucrase, wherein the protein having the activity of an amylosucrase is encoded by the amylosucrase coding region in the DNA insert of plasmid pNB2 from Neisseria bacteria having deposit number Deutsche Sammlung von Mikroorganismen No. 9196, by a DNA sequence that hybridizes to that coding region, or by a degenerate DNA sequence of any of the aforementioned sequences encoding a protein having the activity of amylosucrase.

ADDED per A

45. (Added) A fusion protein comprising a protein having amylosucrase activity, wherein the protein having amylosucrase activity is encoded by a DNA sequence that begins at the initiating codon in the DNA insert of plasmid pNB2 from Neisseria bacteria having deposit number Deutsche Sammlung von Mikroorganismen No. 9196 as indicated in Seq ID No. 1 and ends at the first stop codon located in frame downstream of the initiating codon in that DNA insert.

REMARKS

The Specification

Applicants have amended the specification to make reference to a priority claim to U.S. Application No. 08/737,752 under 35 U.S.C. §121.